REMARKS/ARGUMENTS

The Finality of the Action

It appears that the Office Action Summary erroneously indicates that the January 25, 2007 Action is "Final," since the Examiner makes no reference to the action as being final in the "Detailed Action." The January 25, 2007 Action is the first Office Action following the RCE submitted October 16, 2006 in which a Reply After Final dated August 22, 2006 was submitted for reconsideration. The Reply After Final dated August 22, 2006 was denied entry in an Advisory Action Dated October 6, 2006 on the grounds that new issues were raised requiring further consideration or search. Accordingly, a first action Final Action is not appropriate pursuant to MPEP 706.07(b) which states in pertinent part:

> However, it would not be proper to make final a first Office action in a continuing or substitute application where that application contains material which was presented in the earlier application after final rejection or closing of prosecution but was denied entry because (A) new issues were raised that required further consideration and/or search....

To the extent the Action dated January 25, 2007 is considered a Final Action, withdrawal of the finality is respectfully requested.

The New Rejections Based on Art

Claims 45-88 are currently pending in this application. The prior rejections had all been withdrawn and new rejections were made.

1. Independent Claims 45, 59, 71, 74 and 83

Claims 45, 59, 66 and 67 stand rejected under 35 USC § 102(b) as being unpatentable over Blakeney et al. (US Patent No. 5,267,261). Claims 52, 56, 71, 72, 74, 83 and 85 stand rejected under 35 USC § 103(a) as being unpatentable over Blakeney et al. in view of Velazquez et al. (US Patent No. 6,593,880). Various other claims stand rejected under 35 USC § 103(a) as being unpatentable over Blakeney et al. in view of various auxiliary references. Claims 45, 59, 71 and 83 also stand rejected under §103(a) as being unpatentable over Farwell et al. (US Patent No. 5,396,541) in view of Tarallo (US Patent No. 5,054,035). These rejections are respectfully traversed.

Independent claims 45, 74 and 83 have been amended to explicitly describe the omnidirectional sounding pulse as "being detectable by the base stations in order to establish wireless communication with the mobile unit," which limitation is already contained in independent claims 59 and 71 in the description of the base stations; for example claim 59 defines: "each base station configured to detect sounding pulses emitted from mobile units in order to establish wireless communication with such mobile units ."

The present claims are directed to methods and apparatus to effectuate handover of a mobile unit's wireless communication using the transmission of "an omnidirectional sounding pulse" from the mobile unit to establish a new

communication link with a handover base station. The sounding pulse is designed such that any of the base stations in the network are able to detect it; it is different in kind from general uplink communications transmitted over an already established communication link.

Blakeney et al. is directed to soft handoff of a wireless communication of a mobile station from a first base station to a second base station (Base stations A and B, respectively, of Fig. 8). In Blakeney et al., the handoff procedures are such that the mobile unit already has simultaneous wireless communications with the current base station and the destination base station for the handoff, as explained in Column 27, lines 7-12 and step 214:

> The mobile station in response to this Handoff Direction Message begins to acquire the communications signals transmitted by base station B with diversity combining of the signals of base stations B and A, block 214. **The mobile station is thus communicating with the other user through both of base stations A and B.**

Examiner cites Blakeney et al. disclosure at Column 27, lines 23-29 regarding the transmission of a Pilot Strength Measurement Report Message which states:

> The mobile unit continues travelling through the system, such as by leaving the coverage area of base station A and entering the coverage area of base station B. As the mobile station travels further into the coverage area of base station B the mobile station searcher receiver measures a signal strength of the Active pilot of base station A which has fallen, block 216. As discussed previously, **when the pilot of base station A drops below the threshold T.sub.-- DROP for a period of time determined by the parameter T.sub.-- TDROP, the mobile station generates and transmits a corresponding Pilot Strength Measurement Report Message to both bases stations A and B, block 218. One or both of base stations A and B**

should receive the Pilot Strength Measurement Report Message and transfer it on to the MTSO, block 220.

The Examiner asserts that Pilot Strength Measurement Report Message identified in Blakeney et al. is the same as the claimed "sounding pulse". Applicants respectfully disagree.

The term "sounding pulse" is explicitly described in the specification and also generally has a recognized meaning in the art. See, for example, Freeburg (U.S. Patent 5,095,535) cited by the Examiner in a previous Action. The term is described in the present application as follows:

> [0075] The sounding pulse is a physical signal that is preferably transmitted using an isotropic antenna, which is an antenna that radiates or receives equally in all directions. The form of the sounding pulse is preferably dependent on the radio access technology. For example, in CDMA-based systems, a very short duration burst spanning multiple chips, a short chip sequence, can represent the sounding pulse.
> [0076] The timing for the sounding pulse depends on the implementation and realization of the physical signal, which depends on radio access technology. Each wireless communication medium requires a different pulse timing structure. For example, a FDD-CDMA sounding pulse would be different than a TDD-CDMA sounding pulse.

The omnidirectional sounding pulse is required in the present claims to notify base stations within a geographic area that the mobile unit is present and is seeking to establish wireless communication with a new base station in a response to a handoff trigger. The omnidirectional sounding pulse is not a signal transmitted over an existing wireless communication channel, but instead is a signal transmitted by a mobile unit which is detectable by base stations irrespective of

whether there is an existing communication link. As explained in Paragraph 0020, "The sounding pulse, a radio frequency (RF) signal with or without intelligence, should not be confused with conventional mobile unit uplink channels." As further explained by the present application:

> [0102] **The sounding pulses can be generated at a frequency outside normal uplink and downlink telecom frequencies,** thereby alleviating frequency congestion. For example, in a current deployment of CDMA, the mobile units are normally assigned channels at least 1.25 MHz apart, providing about 42 channels under current frequency allocation scheme. Typically, the uplink transmit frequency is 45 MHz lower than the downlink transmit frequency. The sounding pulses are preferably then assigned to a frequency in close proximity to the uplink or downlink, but not on the same frequency as either the uplink or downlink transmissions.
> [0103] **Normally the sounding pulse is preferably a simple short signal, containing no specific information, but optionally the sounding pulse can contain identification information from the mobile unit. With such information, the base stations can readily determine and distinguish between pulses concurrently received from more than one mobile unit. This information can indicate the reason for which the mobile wants to connect to the network. For example, the mobile unit may want to simply register with the network or it may wish to set up a call.**

In Blakeney et al., the mobile station already has established wireless communication with old base station A and handoff base station B (see Column 27, lines 7-12), and is therefore no longer looking for a handoff base station as per the present invention. The Pilot Strength Measurement Report Message taught by

Blakeney et al. is directly transmitted to base stations A and B over established wireless communication channels. The Pilot Strength Measurement Report Message of Blakeney et al. is used by the MTSO to determine when to terminate the wireless communication between the mobile unit and base station A, thus completing the soft handoff to base station B (Column 27, liens 29-47).

Accordingly, Blakeney et al.'s Pilot Strength Measurement Report Message transmitted over established wireless communication links is not equivalent to an omnidirectional sounding pulse that is detected by base stations without prior wireless communication with the mobile unit for the purpose of establishing a communication with a handoff base station in response to a handoff trigger at the mobile unit, as claimed.

Velazquez et al. discloses a wireless communication system employing directive antenna arrays at both base stations and mobile stations to reduce co-channel interference. Examiner cites Column 6, line 65 – Column 7 line 15 of Velaquez as teaching a handoff method in which the base station uses beamforming for communication, specifically:

> During hand-off between base stations (step 560), the directivity of the mobile antenna array, if employed, is disabled (step 570) to allow the user to communicate with other base stations.

The base stations taught by Velazquez et al. communicate using beamforming antennas. Velazquez also teaches disabling directive communications

during a handoff. However, the disabling the directivity of the mobile antenna array according to Velazquez et al. is simply not equivalent to the omnidirectional sounding pulse of the present invention.

Velazquez et al. uses beam forming for both transmission and reception, e.g. col.6 lines 11-16. In the context of step 570 of Velazquez et al., the disabling of the mobile unit's antenna directivity is to permit the mobile unit to receive the paging signals from all nearby base stations. There is no disclosure or suggestion that the mobile unit transmit an omnidirectional signal to alert the base stations to the presence of the mobile unit. Accordingly, Velazquez et al. is directly opposite the claimed invention.

The present invention teaches a mobile unit initiating a handoff in response to a handoff trigger by transmitting an omnidirectional sounding pulse detectable by base stations to locate a base station for handoff. This is simply not the case in Velazquez et al. Velazquez et al. does not describe a procedure for initiating handoffs at mobile units, nor does Velazquez et al. teach or suggest a mobile unit transmitting a sounding pulse detectable by base stations such that an interface or the mobile unit itself selects one of the base stations that detected the sounding pulse for handoff of the mobile unit.

As per the arguments above, neither Blakeney et al. nor Velazquez et al., alone or in combination, teach or suggest an omnidirectional sounding pulse

transmitted by a mobile unit and detected by base stations for selecting a base station for handoff of the mobile unit as required by present claims 45, 59, 71, 74 and 83. Accordingly, withdrawal of the 35 USC § 102(b) rejection of claims 45 and 59 over Blakeney et al., and the 35 USC § 103(a) rejection of claims 71, 74 and 83 over Blakeney et al. in view of Velazquez et al. are respectfully requested.

Farwell et al. discloses methods and systems to handoff a wireless communication of a mobile unit from one base station to another. The Examiner cites Farwell et al. disclosure at Column 3, lines 37-51 which states:

> When that signal strength drops below a certain threshold, base station **104** transmits a handoff request command to system controller and switch **101.** System controller and switch **101** transmits initiate handoff commands to base stations **102** through **104.** Included in the initiate handoff commands that are sent to base stations **102** and **103** is the channel hopping sequence of mobile unit **105** (as advantageously defined by a pseudo-random seed). **Base station 104 is responsive to the initiate handoff command to transmit to mobile unit 105 via link 114 a start handoff message. Mobile unit 105 is responsive to the start handoff message to commence sending in the first channel of the hopping channel sequence (referred to as hopping channel 0) a synchronization pattern.**

The Examiner asserts that the mobile unit, responsive to the initiate handoff message, commencing sending a synchronization pattern in the first channel is the same as the claimed omnidirectional sounding pulse. This is simply not the case. According to Farwell et al., the base station initiates the handoff not the mobile unit as defined by the pending claims. The response of the mobile unit to an initiate-

handoff message from the base station taught by Farwell et al. is sent over the established first channel after a communication has already been received from the base station. As explained in Column 3, lines 56-59 of Farwell et al., the synchronization pattern is used to synchronize the base station with the mobile unit within the established hopping channel and is not used to establish communication with the mobile station. Moreover, the response is directed only to the base station that sent the start handoff message.

The response of the mobile unit to an initiate handoff message from a base station of Farwell et al. is neither "a sounding pulse" nor is it a message detectable by base stations in order to select a base station for handoff as required by the present claims because it is sent over an existing first channel and is directed to a specific base station.

Tarallo teaches the evaluation of digital signal quality using synchronization patterns and is irrelevant to the features specified by the present claims.

The independent claims 45, 59, 71, 74 and 83 define a mobile unit initiating a handoff by sending an omnidirectional sounding pulse detectable by base stations, where one of the base stations that detected to sounding pulse is selected for handoff of wireless communication with the mobile unit. Farwell et al. and Tarallo, alone or in combination, simply do not disclose the features of claims 45, 59, 71 and 83.

Based on the arguments presented above, withdrawal of the 35 USC § 103(a) rejection of claims 45, 59, 71 and 83 over Farwell et al. in view Tarallo is respectfully requested.

None of the prior art references teach or suggest an omnidirectional sounding pulse detectable by base stations that is not transmitted over an existing wireless communication channel. Thus, the prior art references do not teach or suggest the features of independent claims 45, 59, 71, 74 and 83.

2. Dependent Claim 56, 69, 81 and 86

Claims 56, 69 and 81 stand rejected under 35 USC § 103(a) as being unpatentable over Blakeney et al. in view of Velazquez et al.; Claim 86 stands rejected under 35 USC § 103(a) as being unpatentable over Blakeney et al. in view of Velazquez et al. in view of Anderson et. al. These claims require the mobile unit to transmit the omnidirectional sounding pulse that includes mobile unit identification or location information.

The Examiner asserts that the identification sent in a polling message by Anderson's mobile unit would be readily combined with the "pilot strength measurement message" transmitted in Blakeney. However, there is no teaching or suggestion of such a combination. If fact it would be wasteful and counterintuitive to include mobile ID information in Blakeny's "pilot strength measurement

message," because communication links are already established between the mobile unit and both base stations that receive such message.

To the extent that the Examiner asserts that Velazquez' teaching of a GPS renders obvious the inclusion of location information in the claimed omnidirectional sounding pulse, such combination is likewise not taught or suggested.. Accordingly, the rejection of dependent claims 56, 69, 81 and 86 should be withdrawn.

3. Dependent Claims 57-58, 68, 73, 84 and 87

Claims 57-58, 68, 73, 84 and 87 stand rejected under 35 USC § 103(a) as being unpatentable over Blakeney et al. in view of Anderson et. al. Claims 57-58, 68, 73, 84, 87 are directed to transmitting multiple omnidirectional sounding pulses of increased power by the mobile unit.

The Examiner asserts that Anderson's teaching of increasing mobile unit power, based on how close or far the base station is located, would be readily combined with the "pilot strength measurement message" transmitted in Blakeney to render obvious the claimed multiple omnidirectional sounding pulses of increased power. However, there is no teaching or suggestion of such a combination.

Multiple transmission of increased power is used to establish a communications link. There is simply no need to make multiple transmissions having increasing power of Blakeny's "pilot strength measurement message,"

because communication links are already established between the mobile unit and both base stations that receive the message. Accordingly, the rejection of dependent claims 57-58, 68, 73, 84 and 87 should be withdrawn.

4. Dependent Claims 55, 70, 80 and 88

Claims 55, 70, 80 and 88 stand rejected under 35 USC § 103(a) as being unpatentable over Blakeney et al. in view of Keskitalo. Claims 55,70, 80 and 88 are directed to transmitting an omnidirectional sounding pulse by transmitting multiple sounding pulses that sweep through 360 degrees or a set of calculated arcs.

The Examiner asserts that Keskitalo's teaching of sweeping an antenna beam over a given arc would be readily combined with the "pilot strength measurement message" transmitted in Blakeney to render obvious the claimed transmission of multiple sounding pulses that sweep through 360 degrees or a set of calculated arcs. However, there is no teaching or suggestion of such a combination.

The claimed transmission of multiple sounding pulses that sweep through 360 degrees or a set of calculated is used to establish a communications link. It would clearly be wasteful and counterintuitive to make such a multiple transmission sweep of Blakeny's "pilot strength measurement message," because communication links are already established between the mobile unit and both base

stations that receive the message. Accordingly, the rejection of dependent claims 55, 70, 80 and 88 should be withdrawn.

5. Dependent Claims In General

The dependent claims addressed separately above along with the remaining claims are dependent upon claims 45, 59, 71, 74 and 83 and are all also believed to be allowable based on the reasons set forth above with respect to the independent claims.

Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing remarks, Applicants respectfully submit that the finality of the action be withdrawn and that the present application, including claims 45-88, is in condition for allowance. A notice to that effect is respectfully requested.

Respectfully submitted,

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